The landscape of Princeton’s campus has always been a defining element of its identity and experience. Beginning with the enclosure of the “front campus” between Nassau Hall and Nassau Street in 1756, the relationship between the architecture and the landscape has created a feeling of an intimate academy, unique to this setting. However, part of this campus experience is the myriad pathways and courtyards that, while beautiful to experience, can leave visitors feeling lost. Today, as the University grows, it is vital to maintain and restore the landscape quality of both the campus and natural areas as well as a sense of coherence and connectedness. This goal is achieved, as described in this chapter, through comprehensive strategies in both landscape and wayfinding.
Renewing the Campus Landscape

Affecting approximately half of the main campus area, the Campus Plan will further enhance, restore, and green the already verdant campus.

Princeton’s campus is renowned for the superb quality of its physical environment and the way that its landscape legacy supports and reflects the continued excellence of the institution. During the era in which Beatrix Farrand was the University’s consulting landscape architect and Ralph Adams Cram was the consulting architect, decisions were considered from both perspectives equally, and many of the University’s most cherished spaces resulted from a vigorous exchange between the two disciplines. When Princeton discontinued the tradition of a campus landscape architect in the 1960s, however, there was no longer an individual or organization charged with promoting a vision for the continuity of the overall campus landscape.

The plan will restore a strong voice for the campus landscape and reframe new development within an understanding of the campus and its boundaries. Given Princeton’s current diversity of building styles, scales, and programs, its ongoing commitment to architectural innovation and the historic importance of its wooded setting, a planning process that prioritizes the continuity of the landscape will be needed to preserve the character of the campus experience while also allowing it to develop in new ways. There have been multiple master plans for the University campus, each providing a roadmap for future building sites and social spaces between buildings. The Campus Plan is distinguished by a landscape approach that fully engages the potential to unite the experience and function of the campus through an integration of its overlapping systems.

LANDSCAPE OBJECTIVES

As the University continues to grow, there are many obstacles to the continuity of open spaces in an already strained relationship between the historic core and the newer campus periphery. Elements of historic campus landscape traditions need to be balanced with and woven into the practice of expanding a modern campus. Four landscape principles provide the foundation for this complex undertaking:

- Invent within the traditional pattern of campus-making
- Translate topography into campus form
- Reassert the presence of the woodland threshold
- Anticipate the impact of increased land management and environmental pressures

In support of these objectives, the Campus Plan identifies strategic stand-alone landscape improvements, independent from building projects, each selected for its potential to connect new development and create value for the whole of the campus. Together with proposed architectural projects, the plan adopts a landscape-based approach to weaving disparate parts of campus, different scales of architecture, and different ways of construction into a cohesive campus with a consistently strong identity.

A COMPREHENSIVE LANDSCAPE PLAN

There is a high demand for quality open space at Princeton. Increasingly, University staff now dedicate much effort to accommodating requests to host activities on the campus greens, courtyards, and smaller campus spaces. Escalation in use exacerbates an already acknowledged demand for investment in the landscape.

This plan performs the traditional role of locating landscape areas for improvements, while also recognizing that the campus landscape is made of and relies on a collection of systems: stormwater, planting communities, programming, topography, and land management practices. Every new building, landscape, and infrastructure project at Princeton offers the opportunity to further integrate these systems into a fundamentally sustainable landscape network. The goal of this plan is to allow the function and experience of the landscape to improve even as the use of the campus expands.

The Campus Plan recognizes the challenges of sustaining the overall experience of a campus that is now five times the size of its historic core.
Woodland University Chapel, 2007

INVENTING WITHIN THE TRADITIONAL PATTERN OF CAMPUS-MAKING

The Core Campus landscape experience at Princeton is defined by light-filled courts with open corners, high canopy trees, and stone walks. As the University has grown, the main campus has expanded to be over five times the area of the historic campus, which results in a landscape that feels stretched at the edges. Simultaneously, an increased campus population has put substantial strains on all areas of the landscape, but most particularly the well-loved historic core. In order to strengthen the overall campus experience as well as safeguard the historic core, a degree of inventiveness within Princeton’s traditional patterns of campus-building is required.

The north and south edges of campus have each developed a distinctive feel that is missing from the middle landscape. While to the south, the campus areas adjacent to Lake Carnegie are structured primarily by the woodland landform and low branching conifers that would prevent views and circulation, to the north, the campus areas are defined by light-filled courts with open corners, high canopy trees, and stone walks.

These two themes are reinforced by the placement of buildings and landscapes. Toward Nassau Street the buildings are of a similar size and create configurations that frame the campus open space, whereas buildings located toward Lake Carnegie exist as semi-independent objects anchored by their relation to wooded areas. These two different campus spaces exist harmoniously at Princeton, but the transition between these systems is problematic, especially as the two campus types have grown closer together.

During Beatrix Farrand’s tenure as the consulting landscape architect at Princeton, the two campus types were developed as clearly separate zones for academic and recreational activities. Several nature trails created by Farrand established a delicate network of circulation between these two environments. As the campus progressed and expanded, however, recreational spaces and higher levels of activity were developed at the boundaries of the northern portion of the campus. Taken together, these athletic fields, parking lots, maintenance service areas, dumpsters, and infrastructure resulted in a “middle landscape” that offers, at least, a visual and environmental barrier without any of the cohesive aspects presented by the northern and southern campus types. It is the aspiration of the Campus Plan to diminish the conditions that characterize the middle landscape and to reinvigorate the rich juxtaposition of the two dominant landscape types on campus.

These recommendations suggest this juxtaposition as a way to reclaim a quality that has been largely absent from the Princeton landscape as it has expanded. This goal will establish a campus-wide framework around which several other needed improvements can be structured. These might include campus wayfinding, sustainable stormwater landscapes, ecological improvements to the campus woodland area, and the development of a new landscape language that can withstand contemporary levels of use and help mediate the escalation in building size and complexity that seems unavoidable as the campus continues to develop.

Through its implementation, the Campus Plan will open up new potential for the Princeton campus landscape to be sensitive, sustainable, and beautiful while simultaneously inviting greater use and creating improved functional performance. For instance, in the redesign of Butler College, the need to create a below-grade dining facility presented the opportunity to establish a new social landscape at the heart of the residential college. Providing space for quiet study and small gatherings, Butler College Memorial Court is a contemporary expression of the tradition of small-scale courtyards epitomized by the 1903 Garden, the McCosh Infirmary, Chancellors Green Courtyard, and Pyne Terrace. Similar in spirit to Beatrix Farrand’s citadels that collected rainwater for passive irrigation, originally in evidence at Holder Courtyard and Cuyler Terrace, Butler College Memorial Court uses 21st-century techniques to create a stormwater reservoir that can be tapped into during the drier months of the year.

The ten-year landscape plan aims to increase the articulation of the campus in currently undefined areas, better marrying its building with its landscape context.

HISTORY OF CAMPUS LANDSCAPE ARCHITECTS

1870-1875 Donald S. Mitchell, essayist, novelist, and farmer who had published a treatise on landscape gardening, was appointed to make plans for the improvement of the Princeton campus. Under the leadership of President McCosh, the character of the campus landscape became that of an “English gentleman’s park,” that is, open lands dotted with trees laid out in an informal, not geometric, pattern. Mitchell is credited with the design of the grounds around the first Dickinson Hall, and with the remaking of a front campus 160 feet wide by 270 feet deep.

1906 The creation of Lake Carnegie in 1906, by the construction of a dam at the confluence of the Stony Brook and the Millstone River, marks the moment of greatest landscape change on the campus, transforming hundreds of acres of marshland into a 1.5-mile-long body of water.

1912-1913 Beatrix Jones Farrand had the greatest influence on the unique character of the historic campus. Farrand clearly articulated the function of the campus landscape as a framework for development and its fundamental role in furthering the goals of a liberal education. She proposed a systematic approach to the campus landscape that would provide unimpeded circulation and areas, emphasize the architectural quality of space and composition, and establish a new point of view. The development of a new landscape language introduced the concept of “two-dimensional shrubs” espaliered against building walls and colonnade architecture in the primarily deciduous tree palette, and carefully orchestrated the harmonizing of the biotope to provide a sense of quiet harmony. All of these would become hallmarks of the Princeton landscape.

1943-1957 Alfred Gallaway, a landscape architect of the greatest esteem.


1961-1973 Michael Rapuano, of the New York firm Clarke & Rapuano, nationally known for their work on public and private projects of great importance and scale, conducted the first comprehensive tree survey and report in 1964.

1974-1982 Robert L. Zion of the firm Zion and Biren, Creek Ridge, New Jersey, who was responsible for the design and construction of Firestone Plaza.

Early 1980s-2000 From the early 1980s until 2000, there was a shift in the campus landscape architect being on-call, individual designers were hired in conjunction with each building project—linked to the architects of the building. These landscape architects were included:

• Louise Schiller (new stadium, many sites throughout the campus)
• Skip Burke (Mitchell Shier Architects)
• Carla Ferrari
• Michael Vergason (Driscoll Walk, Friend-Center and arounds)
• Andropogon Associates (First Campus Center)
• Deborah Paris
• Kasvu Partnership (Forestall Campus)
• Henry Arnold (tree study in late 1980s)

2000-2005 Quennell-Rothchild of New York was commissioned to undertake several improvement projects, including the removal of Stuart Plaus, Elmwood walk, and the landscaping around the Audinger Center for the Humanities.

2005-present Public garden designer Lynden B. Miller was hired to continue the Beatrix Farrand tradition. She has designed gardens for Wyman House, Madison House, Lower House, and Prospect House.

2005-present Michael Van Valkenburgh Associates is in the process of planning and designing the landscape—in its overall structure as well as specific spaces—which will knit the campus together as it evolves over the next ten years.

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Butler College landscape plan

Diagrams of forested areas and circulation network
The historic campus establishes open greens at the center of academic life by placing them on high, flat ground. As is often related, the early grounds at Princeton inspired the first use of the word campus, etymologically based on the Latin for “open field” or “expanse surrounded” in reference to the flat open terrain that separated Nassau Hall from Nassau Street.

As campus expansion increasingly encountered the topography of the land descending down to Lake Carnegie, however, the transitions between high ground and low ground became opportunities to develop a new relationship between architecture and landscape.

Throughout the history of campus expansion southward toward the lake, the University’s existing topography has been transformed into landscapes spaces that guide circulation and orientation. The campus is organized by two basic types of circulation that are an intuitive outgrowth of the campus topography:

- North-south tributary paths that maneuver around varied building sizes and styles.
- East-west walks that collect the smaller tributary paths that are characterized by their consistent elevation and straightened geometry.

The Campus Plan seeks to extend and perhaps expand this approach to developing campus circulation through the encounter of the underlying topography. For instance, the New Butler Walk will establish a connection between Blair Archway and Bayard Court, reinforcing the importance of the spaces at each end, while also supporting the integration of the residential college into the campus as a whole.

East-west walks such as Lourie-Love Walk and Ivy Lane improve north-south connections in the eastern precincts of campus. East-west circulation will also be strengthened through improvements to McCosh Walk and Goheen Walk, retrofitting these pathways to better withstand the stresses of contemporary use.

**Topographic form and circulation**

The Blair Archway offers the iconic example of this topographic planning tradition. At the time of its completion, it served as the arrival gateway for the original Dinky train line that stopped at the base of the archway steps. The translation of topography into campus landscape was expanded upon in this location with the moving of the train arrival point to the south. The new procession to the train, developed in collaboration between Beatrix Farrand and Ralph Adams Cram, carefully blends the rising hillside into the architecture and landscape and absorbs the Blair Archway within the interior of the campus.

The further translation rain cistern technologies which serve the dual purpose of reducing runoff and allowing for stormwater reuse.

**TRANSLATE TOPOGRAPHY INTO CAMPUS FORM**

This manner of negotiating place and elevation within the campus is a valuable system that should remain, as existing pathways extend from the campus core into new precincts. For instance, Shapiro Walk is being reconceived so that it might extend the strong landscape character of McCosh Walk across Washington Road all the way to the E-Quad. Similar to the role that Lourie-Love Walk plays in the west, a new public corridor between Prospect Avenue and Ivy Lane improves north-south connections in the eastern precincts of campus. East-west circulation will also be strengthened through improvements to McCosh Walk and Goheen Walk, retrofitting these pathways to better withstand the stresses of contemporary use.

East-west pathways, such as Lourie-Love Walk, are level and straight.

North-south pathways travel the sloped topography to the lake and maneuver around varied building sizes and styles.
A new diagonal will reinforce two critical circulation networks for the expanded campus.

Extend the diagonal
As the campus grew, this system of east-west walks and north-south pathways was not enough to fully connect the campus. Over time, diagonal pathways developed that linked the historic upper campus with areas of growth. Diagonals achieved an effortless continuity of the campus landscape and alleviated a significant elevational obstacle. One key diagonal path passes a series of buildings and landscapes from Alexander Hall to the Frist Campus Center. Increasing the role of this corridor will be an essential component in integrating the expanded lower campus into existing walkways.

In effect, this plan proposes to clear the way for a pedestrian path of least resistance that links the Core Campus and campus lands to the east. Currently the diagonal path ends abruptly at McCosh Health Center and offers only a tenuous link to the Frist Campus Center. The terminus of the diagonal in the area bounded by McCosh Health Center and Guyot is at the same elevation as Washington Road, and thus presents the best opportunity for the creation of a single unifying Sciences Green that integrates the buildings in this part of campus into existing walkways.

The new diagonal
The campus lands east of Washington Road and south of Prospect Street are isolated from adjacent areas of campus by virtue of the roads themselves and the kind of architecture they support. As a result, this area has not yet achieved cohesiveness with the image and tradition of Princeton. Instead of supporting the outdoor social interactions and activities that characterize successful areas of campus, its open spaces are generally residual and often oriented toward vehicles and service uses.

The development of the eastern campus landscape is further complicated by the fact that the Princeton Stadium complex occupies its geographical center. The mass and location of the stadium allow few opportunities to cross this area.

The largest unprogrammed and underutilized space on campus is the perimeter of the stadium. Through improved circulation and a complete transformation of its landscape, the stadium’s western edge presents a significant opportunity for the creation of a single unifying Sciences Green at the heart of the Natural Sciences Neighborhood. The plan proposes a redesign of the space and its roadways, lawns, walks, and trees. With a continuous green corridor, realigned service roadways, and walks at the perimeter, the Sciences Green will create a usable and attractive campus open space that integrates the buildings in this part of campus with open vistas to the north and south. This new greensward also has the potential to be extended north of Ivy Lane as that area develops in the future.

The proposed Sciences Green landscape design will unify circulation and campus character, and serve as a framework for future development, tying the new with the existing.
The wooded edge along Lake Carnegie and the remnant woodlands that follow the several tributary streams are important fragments of a complex ecological system. As the campus has grown, increases in the amount of stormwater being directed to the tributaries and the removal of woodland area has continued to put pressure on this already fragile ecology. In the interest of improving the campus environment, the campus woodlands are recognized in the plan as a valuable campus asset that needs to be protected, and in some cases restored.

This original woodland can still be partially seen as one uses the Washington Road and Elm Drive entrances to the University. The woodland that frames these entrances has become a familiar identifier of the Princeton precinct, as most visitors to Princeton now approach from Route 1. This remaining natural landscape creates a moment of arrival at Princeton (town and university) by establishing a clear separation from the suburban highways. Despite the diminished size of the overall woodlands, the concentration at the campus entrances provides a strong counterpoint to the refinement of the inner campus landscape.

Ecological health is sometimes a matter of establishing enough area to have a true woodland center, not just a series of edges. The breaks in the woodland area that have been created in the last few decades of development, have limited the continuity of the woodland canopy. Each significant break in this woodland mass creates more edge conditions which, as smaller fragments, lose stability as a woodland system and become increasingly more vulnerable to invasive species and establish exponentially greater opportunities for habitat. Building upon these woodland zones in overall size, complexity, and function is a priority of this plan. At every opportunity, Princeton should seek to construct woodland buffer areas.

At each of these buffers the planting can be designed to establish a density both of trees and ground plane plantings to help resist the influx of invasive species at the edge. These protective zones at the edge of woodlands are prime opportunities to create landscapes that absorb stormwater loads generated by the new projects. As has been recognized by employing this strategy in the design of the new Chemistry building, it is far easier to build these stormwater treatment landscapes as part of the construction of a major capital project than to wait until after a building and its associated site improvements are completed.

Buffer landscapes
As part of the overall strategy of increasing the size and presence of the woodlands, the Campus Plan proposes new woodland plantings along Washington Road and Elm Drive. These buffers will create new recreational opportunities through nature paths, restoring the experience of Farrand’s path systems and informally linking the University to recreational activities. From an ecological perspective, the proposed new woodland areas will act primarily as protection for the original fragments of native woodland. They will provide an important first line of defense against edge vulnerabilities like invasive plant species and establish exponentially greater opportunities for habitat. Building upon these woodland zones in overall size, complexity, and function is a priority of this plan. At every opportunity, Princeton should seek to construct woodland buffer areas.

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The Plan: Connecting the Campus

Anticipate the Impact of Increased Land Management and Environmental Pressures

From a sustainable landscapes perspective, the ideal campus would consume no outside resources, present no hazard to adjoining natural systems, require no maintenance, and produce no waste. Although it is unlikely Princeton can ever achieve this goal, there is interest in seeking new ways to move closer to it. A major initiative of the Campus Plan has been to integrate the principles of sustainability into all aspects of the design, construction, and maintenance of the landscape. By striving to do better than just what is required by regulation, Princeton can become a national leader in sustainable landscape practice.

In her work at Princeton, Beatrix Farrand acknowledged the challenges and rewards of working with a “living institution;” in that each project she built at Princeton added to the historic core. This diversity in scale and type allows for the expression of new ideas in an economical and attractive fashion, the extent of campus growth has led to divergent styles of architecture as one moves away from the historic core. This diversity of image, the mixing of vehicular and pedestrian traffic on these surfaces, the increased variety of scales and types of open space, and the way that the paving contributes to the environmental health of the landscape, all need to be considered while knitting together the existing paths and creating a method by which the system might expand.

Soils are a less visible component of landscape health, but the functions that they perform are vital to addressing the increased pressure of larger campus populations and more intensive use, such as annual reunions. Similarly, the campus-wide approach to water, namely through stormwater reuse, is not highly visible, but is essential to the function of the landscape. Civil engineering and soils can both be employed to attain a goal of keeping as much rainfall as possible on site for reuse.

It is nearly impossible to speak of the performance of any individual landscape component, like planting, soils, paving, or stormwater reuse, in isolation because they are each intrinsically interconnected with the others. Innovations in landscape architecture have always emerged from the study of the performance and interaction of these basic mediums. The Campus Plan proposes both big and small measures that will contribute to make Princeton a leader in this approach. Taken together, these efforts will result in a campus that recharges its groundwater; sustains healthy plants that, in turn, require less maintenance; and reduces stress on the regional ecology and performance of the tributary streams into which most of Princeton’s stormwater runoff is released.

Princeton has always valued the overall quality of its campus landscape. Particularly during the period of rapid growth that characterized the Farrand years, the excellence of the campus environment, as expressed in its planning, design, construction, and maintenance, was very much a priority of university policy. A robustly beautiful and functionally sustainable landscape continues to be the ideal whole through which meaningful connections can be made between Princeton’s history of landscape excellence and its ongoing expansion as a modern campus.

The Plan: Connecting the Campus

Princeton on the GARDEN TRADITION

Beatrix Farrand, one of America’s finest landscape designers, worked on the Princeton campus from 1915 to 1941. Her deep understanding of plants and decades-long implementation of enhancements to the campus landscape have had a lasting impact on the beauty of this special place. Her legacy has endured thanks to the passing on of her design ideas from one University grounds manager to another over the years. That many of Mrs. Farrand’s wonderful plants can still be found across the campus is also a testament to her understanding of what we now call the sustainable landscape. She added many fine varieties of trees and shrubs to the campus with an emphasis on those native to the Princeton area and of interest during the school year. Her work can best be seen in many of the beautiful trees, shrubs, and climbing plants that are still thriving at the Graduate College and Wyman House.

Beatrix Farrand believed that the beauty of the campus added to the mental growth and well-being of students. Generations of Princetonians have been devoted to their landscape. Because the campus is now used and enjoyed 12 months of the year, it is important to have plants for all four seasons. Expanding on a plan begun by Mrs. Farrand, we designed a garden within the walled upper garden adjacent to Wyan House. In the shade of enormous elm trees, we designed gardens around M. Alden House, home of 10 Princeton presidents and now occupied by the Alumni Association. Inspired by M. Farrand’s dazzling displays at the Rockefeller Garden in Seal Harbor, Maine, which are still being maintained, we have added winter structure and many new plants to the Prospect House gardens and will continue to refresh this garden in the future.

Working with the University’s landscape team, we are designing new gardens and adding the very best plants around the campus. It is a great honor to be following in the tradition of Beatrix Farrand by continuing to enrich the Princeton landscape experience for students, staff, and visitors.

Lynden B. Miller
Garden Design Consultant to Princeton University
Stormwater Management

Protect the lake and watersheds from the impacts of development by restoring the existing water system and establishing stormwater management principles.

Princeton University belongs to the Stony Brook Millstone River watershed. Stream corridors, forest buffers, and other natural resources located on the campus are essential for preserving and maintaining a healthy, balanced ecosystem and a natural flow of water.

As the campus and surrounding communities have grown over time, there has been a slow degradation of the watershed’s natural resources and the ecology of the lake valley. Development has interrupted and altered natural processes, throwing the stable interaction between elements of the ecosystem out of balance.

Buildings, parking lots, roadways, and other structures within the watershed have increased the number of impermeable surfaces that prevent rainfall from percolating into the soil where it replenishes the groundwater aquifer and feeds the streams and Lake Carnegie. Instead, rain falling on these surfaces moves across the land as runoff, where it is captured in constructed stormwater infrastructure and discharged directly into the streams and lakes. Currently, most rain falling on the developed areas of campus is being converted directly to runoff, causing water pollution, erosion, and flooding.

A STORMWATER MANAGEMENT STRATEGY FOR PRINCETON’S CAMPUS

At present, the University primarily manages stormwater in two regional detention basins: the West Basin and East Basin. Each basin was designed and constructed to control stormwater runoff for future development projects, relying on a “banking” system established to deduct impervious development from the total available capacity. This methodology was in line with the stormwater regulations at the time they were constructed, and many development projects on Princeton’s campus have deducted capacity from the two regional basins. Unfortunately, most of the runoff from these development areas did not physically flow to either the west or east regional basin. As a result, the receiving stormwater systems and stream valleys that conveyed these storm flows to Lake Carnegie have deteriorated.

The Campus Plan identifies several new campus-wide stormwater management projects that will not only make important contributions to the success of future development at Princeton, but will also comply with recent more stringent regulations. These projects are intended to mitigate and treat stormwater for near- and long-term initiatives on a localized basis in an attempt to alleviate the over-burdened storm drain and stream systems. Furthermore, the Campus Plan proposes the use of sustainable design principles such as Low Impact Development (LID) techniques for all future development projects, to minimize adverse effects to the environment.

APPROACH AND ANALYSIS

The stormwater management strategy proposes a two-pronged approach to restore the watershed. First, a series of campus-wide strategies will restore the watershed and create capacity for future growth. Secondly, specific projects will meet the highest standards of sustainability, going above and beyond mitigating their own impacts in order to contribute to the enhancement and restoration of the watershed.

The East Basin offers little valuable habitat and is currently an eyesore to the surrounding area.

PROPOSED PROJECTS

Stream Restoration Projects
1. Elms Drive stream
2. Washington Road stream
3. Underground Detention and Infiltration
4. Arboretum Field
5. New athletic fields
6. Re-piping and Shifting Watershed Baselines
7. Ivy Lane parking lots
8. East Basin: Project-Specific Stormwater Management
9. Chemistry building (case study)

Four watersheds lie within the area of the main campus. The stormwater management plan proposes campus-wide strategies to improve the quality and reduce the rate of water runoff that passes through the watersheds and down to Lake Carnegie. These strategies fall under four main categories: restoration of the major natural streams on campus (1, 2), detention and infiltration of stormwater under new athletic fields (3, 4), re-piping and shifting of runoff to watershed three (5, 6), and improvements to the capacity of the East Basin (7). In addition to these campus-wide strategies, project-specific improvements will be implemented. See the Chemistry building case study (8).
CAMPUS-WIDE APPROACH

The campus-wide approach to stormwater management begins with a “sensitivity analysis” that identifies areas most affected by projected future development. The analysis first establishes a comprehensive hydrologic model of the entire campus to develop an understanding of the complex nature of the present-day watershed. Then data about planned campus-wide development is applied to the hydrologic model in order to understand what type of impact future building will have on current conditions.

The analysis evaluates the watershed’s response and identifies specific drainage areas that are most sensitive to development. The campus-wide approach promotes sensible, localized stormwater management strategies, not a single solution. For example, the central and western portions of Princeton’s campus have experienced the greatest impacts from past development, resulting in erosion and degradation in the stream corridors. Based on the sensitivity analysis, various stormwater management strategies were identified that will not only mitigate anticipated adverse impacts of planned development, but also repair and restore the present-day degradation resulting from past development projects.

For areas where high density development is proposed and/or where existing drainage areas are highly sensitive to projected growth, the plan proposes designs that will mitigate the projected increase in stormwater by constructing systems that will detain and infiltrate it. Certain projects present the opportunity to create capacity for nearby future growth, such as two athletic field projects proposed at Bedford Field and the eastern athletic practice fields. Other proposed projects, such as the Ivy Lane parking lots, can alleviate an over-burdened sub-watershed area by “shifting” water runoff from one area to a nearby area that has available capacity.

In areas that are currently degraded and slated for high density development, the plan proposes landscape-based restoration projects that will help sensitive areas regain capacity as well as create additional capacity to accommodate future growth. The current degraded stream valleys (Washington Road and Elm Drive) and pond (East Basin) on campus present prime opportunities to implement watershed restoration projects. The stream valleys should be stabilized, re-established with native plants and enhanced with floodplains and wetland areas along the banks.

PROJECTS AND STRATEGIES

Elm Drive stream restoration

Portions of the Elm Drive stream channel will be restored by creating floodplains and wetlands, stabilizing the channel using bio-engineering techniques, and restoring buffer zones. Restoration of floodplains and wetland areas along the stream channel should provide capacity for development projects in the Arts and Transit Neighborhood or other development.

Washington Road stream restoration

The redevelopment of the Natural Sciences Neighborhood presents an opportunity to restore the buffer zone and habitat associated with this stream. The Washington Road project will expand the ecological area by recreating the buffer zone, enhancing and stabilizing the existing stream channel, creating floodplains, recreating habitat, and restoring the natural water balance. Creating floodplains could provide additional capacity for development, as well as contribute to the improved health of the watershed.

Bedford Field

The future reconstruction of this field southwest of the Neuroscience and Psychology buildings presents a stormwater mitigation opportunity. Layers of crushed stone will be constructed beneath the Bedford Field to store, mitigate, and infiltrate stormwater for Neuroscience and Psychology and other projects.

New athletic practice fields

The construction of the new athletic fields will provide stormwater mitigation for the project itself, as well as creating capacity for future development. The fields will be constructed over layers of crushed stone in order to store, mitigate, and infiltrate stormwater.

To make a complex campus environment truly sustainable requires plans and designs that answer multiple challenges “at one fell swoop.” This way better playing fields make room for better buildings and landscapes absorb stormwater away from civil engineering.

—GUY NORDENSON
PROFESSOR OF ARCHITECTURE
New development projects present an opportunity to enhance sensitive watersheds by going beyond simply mitigating their project-specific impacts.

When selecting sites for new development, existing ecological resources should be protected to the greatest extent possible in order to maintain natural processes that store, treat, and infiltrate stormwater. Wooded areas, open space, and resource buffer zones should be preserved in order to maintain groundwater recharge that ultimately feeds wetlands, streams, and surface water bodies.

New development projects also provide opportunities to reintroduce natural systems into the built environment. By recreating systems such as streams, wetlands, floodplains, and vegetated buffers, natural processes can be restored to support a balanced ecosystem, improve water quality, and provide flood capacity for stormwater. Newly-created natural systems typically exceed stormwater management regulations specific to individual projects, thereby contributing to the overall sustainability of the watershed.

Future development at the University will promote sustainability by minimizing negative impacts and enhancing ecological processes within the watersheds. Sites selected for new development projects should first and foremost respect the environment by protecting sensitive natural resources, buffer zones, forests, and other ecologically sensitive areas. Whenever possible, new projects should build on existing developed sites, improve the impervious areas and preserving or protecting sensitive areas such as riparian buffers, wetlands, steep slopes, flood plains, woodlands, and areas with permeable soils and mature trees.

When selecting sites for new development, existing lands, and areas with permeable soils and mature trees. Coastal and riparian areas should be protected to the greatest extent possible, and new development should not adversely affect the natural water balance because of changes to the hydrologic cycle. Ecosystem.buffer zones, wetlands, steep slopes, flood plains, woodlands, and areas with permeable soils and mature trees.

Biomimicry: reintroducing natural systems into the built environment and rethinking the engineer’s traditional “interference” response to development. Biomimicry uses the principles of nature, rather than structured or engineered solutions, to manage stormwater.

Water conservation: conserving water to contribute to the long-term sustainability of resources. Water conservation techniques decrease the project’s overall consumption of water and reduce the demands on the water supply and disposal.

The individual project goals for stormwater management should exceed local regulations requiring projects to match existing conditions. Projects should strive to reduce the rate and volume of stormwater runoff by 25 percent and demonstrate exemplary water quality treatment measures.

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The individual project goals for stormwater management should exceed local regulations requiring projects to match existing conditions. Projects should strive to reduce the rate and volume of stormwater runoff by 25 percent and demonstrate exemplary water quality treatment measures.
Wayfinding

A new comprehensive wayfinding program will promote a better visitor experience and improve traffic patterns by providing essential information that people and residents need to find the University and navigate the campus.

Initially, Princeton developed as a tranquil enclave where students and faculty could together pursue their academic endeavors with minimal interruption. As the University grew and developed in the 20th century, the gates opened, and soon the number of visitors to programs and campus events swelled to over 700,000 a year.

Like much of the University’s landscape and buildings, previous modes of signage were designed to serve the “private Princeton,” home to an intimate community very familiar with the quirks of the Core Campus. But the modern campus needs an up-to-date, comprehensive wayfinding program that will communicate directions clearly and concisely to a wide variety of visitors seeking diverse campus destinations. Without creating visual clutter, this new generation of signage and other prompts will provide the necessary information that newcomers, and the entire community, will need to navigate their way to and around campus. An effective wayfinding system will deliver people to events, meetings, and classes without disturbing the experience and pleasure of their campus journey.

Princeton is a strikingly beautiful and distinguished academic setting that is confusing to navigate in spite of its long views, particularly when approaching from the south, campus topography coupled with courtyards that limit visible landmarks and the presence of gothic courtyards and quadrangles, while beautiful and inspiring to visit, often disorients first-time visitors. The Princeton campus is a large campus made up of intimate spaces. Like much of the University’s landscape and buildings, previous modes of signage were designed to serve the “private Princeton,” home to an intimate community very familiar with the quirks of the Core Campus. But the modern campus needs an up-to-date, comprehensive wayfinding system that will communicate directions clearly and concisely to a wide variety of visitors seeking diverse campus destinations. Without creating visual clutter, this new generation of signage and other prompts will provide the necessary information that newcomers, and the entire community, will need to navigate their way to and around campus. An effective wayfinding system will deliver people to events, meetings, and classes without disturbing the experience and pleasure of their campus journey.

Wayfinding without changing the essential nature of the University will create a surrogate street system with recognizable reference points. This will support pedestrian wayfinding without changing the essential nature of the core areas of the campus experience. By enhancing this existing asset with simple markers, the navigation system will overcome topographic limitations and short vistas. These pedestrian pathways comprise the primary organizing principle for a new campus wayfinding system.

THE PRINCETON CAMPUS COMMUNITY

The Princeton campus population comprises undergraduates, graduate students, faculty, administration, and staff. All of these people were once first-time visitors who had to find their way to Admissions, student check-in, a meeting, or an interview for employment. Like the residents of any town, the members of the Princeton community have their prescribed routes and destinations. When they depart from those typical pathways, they may get lost or feel unsure about finding a particular destination. Changes to the campus over time mean that even alumni can feel disoriented in a place that they once knew intimately.

A WALKABLE CAMPUS

One of Princeton’s most distinctive features is its landscape of beautiful tree-lined stone pathways and named walks. This network forms the basis of an effective and well-designed system that delivers visitors and residents to their desired destination. By lengthening and reinforcing this network with landscape improvements and new construction, the University will create a surrogate street system with recognizable reference points. This will support pedestrian wayfinding without changing the essential nature of the campus experience. By enhancing this existing asset with simple markers, the navigation system will overcome topographic limitations and short vistas. These pedestrian pathways comprise the primary organizing principle for a new campus wayfinding system.

UNDERSTANDING THE CAMPUS

Princeton is a large campus made up of intimate spaces. It is a place more-easily understood over time as intricacies and nuances that were initially confusing coalesce into the image of a single coherent space. The wayfinding challenge is to create a “language” that will facilitate giving directions to first-time visitors. This begins by breaking the campus down into smaller, more easily understood areas and implementing a system of check-points that will enable visitors to quickly reference their location for orientation purposes.

Campus Components

Buildings Like all campuses, Princeton can be comprehended as clusters of buildings. This simple classification is easily understood by different people in a variety of ways: by function (academic, residential, athletic, cultural), by form (such as a distinctive landmark), by name (as a location on a map) or as a destination in an event listing.

Roads The vehicular arrival routes to campus are the main arteries of the campus, the system that delivers most visitors and members of the community to the University.

Pathways Once they have arrived, the visitors and members of the community encounter the network of pedestrian walkways that lead them from the edges into the core areas of the parklike campus and its intimate courtyards.

700,000 VISITORS A YEAR

Princeton plays host to a diverse list of visitors each year who would all benefit from improved campus wayfinding.

Recent annual attendance counts:
- Art Museum: 100,000
- McCarter Theatre Center: 200,000
- Other concerts and performances: 100,000
- Athletics: 200,000 (all events)
- Admissions: 20,000 (Orange Key Tours)
- Conferences, camps, and summer academic programs: 30,000
- Alumni Reunion events: 20,000
- McCarter Theatre Center: 200,000
- Art Museum: 100,000
- Conferences, camps, and summer academic programs: 30,000
- Alumni Reunion events: 20,000
- Firestone Library: 16,500
- Commencement: 10,000

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EXISTING CAMPUS SIGNAGE

At present, Princeton is dotted with myriad signs representing many generations of styles and approaches. What is missing is not necessarily quantity, but quality and consistency. There is a rich heritage of inscribed signs that lend character; while this tradition has been carried forth in some of the modern architecture on campus, understated execution (2) limits its usefulness. Other buildings are underscored, most notably athletics facilities, like Jadwin Gymnasium (4), which has no visible exterior identification signs. A consistent “palette,” a logical approach, and well considered sign placement will greatly improve both vehicular and pedestrian traffic flow. Previous signage efforts also included free-standing map cases spread around campus which serve as moderately successful wayfinding tools. Their effectiveness is undermined by poor execution and placement—with the maps (3) at the back of the case rather than close to the glass and the viewer—as well as their occasionally awkward locations.

SIGNAGE CATEGORIES

Vehicular The Campus Plan recommends improved state highway signage, a University marker along Washington Road to signal arrival, street identification signs, an expanded family of vehicular directional signs, and an improved system of parking lot identification and classification.

Pedestrian Pedestrian signs will consist primarily of directional signs attached to existing campus lampposts. Colored bands at the lamppost base would identify the major campus walks. Directional “finger” signs at key intersections will help visitors quickly find their way with minimal visual impact.

Identification The comprehensive and consistent identification of campus buildings will help visitors and new campus residents find a destination. Improving the visibility of existing inscriptions with guidelines for contrast and fill colors will also improve their legibility.

Information The creation of a new campus map will be essential for better campus orientation, as well the introduction of new information kiosks at key points of arrival that will help someone quickly plot a route or check an event’s location. Whether messages are delivered via kiosk, pamphlet, website, or hand-held device the goal is to help people focus on the purpose of their visit rather than the frustration of being lost.

For more than 250 years Princeton’s campus has grown to serve the needs of students, faculty, and society. A new wayfinding system will make it easier for the entire University community and our many welcome visitors to enjoy these beautiful grounds and buildings, and take advantage of the extraordinary resources to be found here.

—BRIAN I. MCDONALD, VICE PRESIDENT FOR DEVELOPMENT
VEHICULAR STRATEGY

Most modern-day visitors to the Princeton campus arrive by car. Though there are a variety of routes, the most direct and ceremonious is via tree-lined Washington Road. As one drives north, the road passes over the lake, then cuts through the campus, providing access to the west and east parking areas. The intersection of Faculty Road, currently undersigned, is an important traffic distribution point with access to both visitor parking lots.

Beginning at Route 1, a new comprehensive signage system will offer consistency and clarity. At present, messages for visitor parking at the Lot 7 garage change from “Admissions Parking” to “Parking Garage Entrance” and the garage is commonly referred to as “Lot 7.” In conversation or printed driving directions, to avoid confusion and make giving directions easier, the new system will institute clear naming conventions across all media, from signage to print to web and will divide campus visitors into those seeking destinations west of Washington Road and those heading east of Washington.

Additionally, the vehicular strategy will focus on providing a family of signs that will display information at key intersections in an attempt to direct cars in the right direction and prevent them from driving in restricted areas. For example, the current building identification signs along Washington Road imply access from that roadway that does not actually exist. The process of pausing to read, consider, and even turn at those signs creates potential hazards on an already congested route. Delivering visitors to the appropriate parking areas and seamlessly onto the campus shuttle will make the visitor experience memorable for all the right reasons.

PEDESTRIAN STRATEGY

Princeton is largely a pedestrian-friendly campus with an intricate web of landscaped walkways that traverse the grounds from north to south, west to east. This system, implemented in large part by landscape architect Beatrix Ferrand from 1912 to 1949, is one of the University’s most treasured assets. Everyone on campus uses these pathways, in conjunction with the campus shuttle, to get to classes, meetings, appointments, and events. But a first-time visitor can find weaving through archways, intimate interior courtyards, and past seemingly unmarked buildings, disorienting and confusing.

Spanning the campus are walks named after past University presidents—McCosh, Goheen, and Shapiro—as well as unnamed key routes. These serve to collect and distribute pedestrian traffic; they are an existing, well-integrated mechanism designed to deliver people efficiently on foot or bicycle to their destinations. The missing link is the user’s ability to understand and reference this system. Renovations and additions to pavings and plantings will create a more complete set of recognizable pedestrian pathways, benefiting first-time visitors and long-time campus residents alike.

In tandem with improvements in the landscape, an integrated pathway signage program will introduce a descriptive language for routes and navigation that has been missing from the campus “dialogue.” By utilizing existing elements in the landscape such as the prevalent campus light post, and introducing pedestrian-scaled “finger” signs, the wayfinding program will have a minimal visual impact on the overall campus environment.